

DEMOTIC HOROSCOPES

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WHILE working on Demotic astronomical texts, I sorely felt the need of palaeographical resources for astronomical symbols. Spiegelberg's attempt in this direction appeared to be incomplete and occasionally unreliable.¹ Moreover, since several of the documents are horoscopes, one could hope to obtain more definite chronological information about the palaeographical material in question by dealing with these texts astronomically. This resulted in finding a very close relationship between five of these horoscopes—so close that a join of one of Spiegelberg's and one of Sir Herbert Thompson's ostraca could be made. As to palaeographical problems, already Spiegelberg assumed a connection between medieval zodiacal and planetary symbols and Demotic forms. This hypothesis is in itself very plausible² but very difficult to prove in detail. I hope to have succeeded at least in one particular case, the sign \simeq , opening a new possibility to explain the origin of such a symbol. For the majority of signs the main difficulty consists in the complete lack of epigraphic studies in this field as far as Greek papyri and medieval manuscripts are concerned.

Before going into details, I wish to express my warmest gratitude to Dr. G. R. Hughes of the Oriental Institute of the University of Chicago. I owe to him many very valuable suggestions and corrections in my readings and translations. He furthermore drew my attention to the two ostraca published by Thompson and to the papyri Cairo 31222 and 50143. The discovery of the symbol \square for Saturn is one of his results. Finally, Dr. Hughes investigated the approximately 2500 Demotic ostraca in the Oriental Institute with respect to astronomical texts and succeeded in finding one new horoscope, which is published here with the kind permission of the Oriental Institute.

¹ Spiegelberg [3] Pl. IV twice shows the "knife" as the symbol of the zodiacal sign "Leo," although it means "Leo" only once, but "Mars" in the second text (see below Pls. 2 and 4).

² As early as 1708, B. de Montfoucon speaks in his *Palaeographia Graeca* (p. 373) about the Egyptian origin of the astronomical symbols, at this time, of course, without any actual epigraphical evidence.

§1. Horoscopes

1. Beside the five ostraca discussed below, only one additional horoscope in Demotic writing is known to me, namely, horoscopic notices on a coffin-lid discovered by Brugsch in 1857 at Luxor.³ The lid shows inside a large figure of Nut surrounded by pictures of the twelve zodiacal signs. Among these signs, the names of the planets are indicated in cursive writing, obviously later additions of the purchaser of the sarcophagus, the priest *Heter*, ($\text{𓆎} \text{𓆏} \text{𓆐}$), indicating the constellations on the day of his birth. These notes are as follows:⁴

- u. $\begin{cases} \text{hr-p-}\dot{\text{st}}^3 \text{ n} & \text{Jupiter (and)} \\ \text{hr-p}^3\text{-k}^3 \text{ n my} & \text{Saturn in Leo} \end{cases}$
- v. $\text{phwy n t}^3 \text{ m} \text{ hr-t}^3 \text{ r}$ end of m : Mars
- w. $\text{sbk t}^3 \text{ dl. t}$ Mercury in Scorpius
- x. above Scorpius: $\text{p}^3 \text{ r}^4\text{-h}^4$ the ascendant
- y. between Scorpius and Sagittarius: $\text{p}^3 \text{ ntr dw}^3$ the morning star
- z. above Sagittarius: $\text{nty } ^3 \text{ t} \langle \text{h} \rangle$

u. n: both n refer to my, written only once because of lack of space.—v. m : written by ideogram only.—v. phwy ; w. dl. t : these readings were suggested to me by Dr. Hughes.—x and z: reading very doubtful.

Such a complete horoscopic constellation is amply sufficient to determine its date within the narrow limit of some days;⁵ the result is 93 A. D., middle of October.⁶ Because we know that the owner died at the age of $31\frac{1}{2}$ years,⁷ the horoscope must have been written at the latest in the beginning of the year 125 A. D.

2. We turn now to a uniform group of Demotic ostraca, which will henceforth be cited by the following abbreviations:

³ Brugsch, Rec. I Pl. 34 and 35 and ZDMG 14 (1860) p. 15 ff.

⁴ Citations u, v, . . . etc. according to Brugsch.

⁵ A simple graphical method proved to be very useful to find in a few minutes the year in question.

⁶ The calculated longitudes for 93 A. D. Oct. 16 are: Jupiter in Q 11, Saturn in Q 21, Mars in m 25, Mercury in \simeq 18 (instead of m), Venus in r 11. About 3 or 4 degrees should be added in order to get Egyptian longitudes (cf. Neugebauer [1] p. 230).

⁷ Brugsch [1] p. 16.

- Os. 1 Chicago M. H. 3377 (see below Pl. 1)
 Os. 2 Strassburg (Spiegelberg [3] p. 150)
 Os. 3 upper part: coll. Thompson 1 (Thompson [1] Pl. 28)
 lower part: Strassburg (Spiegelberg [3] p. 149)
 Os. 4 Strassburg D 270 (Spiegelberg [2] col. 223/224)^s
 Os. 5 coll. Thompson 2 (Thompson [1] Pl. 28).

^s Cf., furthermore, Müller [1] and [2]. Oefele [1] p. 24 contains a rather phantastic treatment of Os. 4 which does not deserve serious consideration.

The most complete form is represented by Os. 3 which gives not only the planetary constellation but accounts for the influence of all twelve zodiacal signs. Os. 1, 2 and 4 restrict themselves to the first part only; Os. 5 is only fragmentarily preserved.

3. The parallelism between these horoscopes is made evident by the following transliteration, with the exception, of course, of the lower part of Os. 3 and the differences due to the special constellation in each case.—The use of modern symbols for the zodiacal signs indicates that only the ideograms are used in the text.

Os. 1.


1. $h^3.t$ sp 43
2. tpy $h^3.t$ $\acute{s}w$ 16 (?)
 p^3 ty 8-t n
3. p^3 hrw i^3h n (?)
4. p^3 r^* n t^3 Π $\acute{s}bk$
5. i^3h n p^3 k^3 21
6. p^3 r^*-h^* p^3 nty
 $\acute{s}th$ $hr-d\acute{s}$
7. p^3 r^*-htp n^3 X
8. p^3 $\acute{s}y$ p. t t^3 Π
9. t^3 $d^3.t$ n^3 $tbty.w$
10. $sw\acute{s}p$ n 10 t^3 \underline{dl}
 $hr-p^3-k^3$ t^3 $i^3hy.t$
- 10^a. $hr-p^3-\acute{s}t$
11. p^3 $sw\acute{s}p$ n wnm p^3
 m^3y
12. $[p^3 sw]\acute{s}p$ n $wbt(?)$
 p^3 mw
13. p^3 twr n wnm t^3 Π
14. p^3 twr $wbt(?)$ p^3
 $hr-n^3h$
15. p^3 $\acute{s}hn$ n^3h p^3 $hr-n^3h$

Os. 2.

1. $h^3.t-sp$ 4-t II $h^3.t$
 $\acute{s}w$ 9 p^3 ty 11-t
 $rhwy$
2. p^3 r^* n t^3 i^3hy
3. i^3h n p^3 k^3 n 16
 $hr-d\acute{s}$
4. $p^3(?)$ r^*-h^* n (?)
 $tbty.w$
5. p^3 r^*-htp n (?) Π
 n (?) ntr dw^3
6. p^3 $\acute{s}y$ p. t p^3 nty- $\acute{s}th$
7. p^3 $\acute{s}y$ $d^3.t$ n^3 X
8. p^3 $sw\acute{s}p$ n 10 t^3 \underline{dl}
9. p^3 $sw\acute{s}p$ n $wbt(?)$ p^3
 m^3y
10. p^3 $sw\acute{s}p$ n wnm p^3
 mw
11. $[p^3 t]wr$ [n] wnm
 t^3 Π

destroyed

Os. 3.

1. $h^3.t-sp$ 4-t III
 $[pr].t$ 1 p^3 ty 4-t n
 $rhwy$... 
2. p^3 r^* n n^3 $tbty.w$
 $hr-p^3-\acute{s}t$
3. i^3h n p^3 nty $\acute{s}th$...
4. p^3 r^*-h^* t^3 i^3hy
5. p^3 r^*-htp p^3 isw
6. p^3 $\acute{s}y$ p. t p^3 $gnh\acute{d}$
7. t^3 $d^3.t$ p^3 $hr-n^3h$
 $hr-p^3-k^3$
8. p^3 $sw\acute{s}p$ n mtr
 $[n^3]$ X
9. p^3 $sw\acute{s}p$ n $wbt(?)$
 n (?) $[tbty]$
10. p^3 $sw\acute{s}p$ n wnm t^3 Π
11. p^3 twr n wnm p^3 isw
12. p^3 twr $wbt(?)$ p^3 mw
 p^3 m^3y
13. p^3 $\acute{s}hn$ n^3h $[t^3]$ \underline{dl}
14. t^3 $dny.t$ $\acute{s}n$ p^3 nty- $\acute{s}th$
15. t^3 $dny.t$ it p^3 $hr-n^3h$
16. t^3 $dny.t$ $\acute{s}ry$ p^3 mw
 $\acute{s}bk$
17. t^3 $dny.t$ hne n^3
 $tbty.w$
18. t^3 $dny.t$ $\acute{s}hne$ p^3 isw
19. $\acute{s}hn$ mt p^3 k^3 $hr-d\acute{s}$
20. t^3 $dny.t$ ntr n^3 X
21. pr $ntr.t(?)$ p^3 $gnh\acute{d}$
22. p^3 $\acute{s}y$ p^3 m^3y
23. p^3 $\acute{s}sr$ t^3 Π

Os. 4.

1. $h^3.t-sp$ 21 III $\acute{s}mw$
 $\acute{s}w$ 13 p^3 ty 7-t
 $[n$ p^3 $hrw]$
2. p^3 r^* n p^3 $gnh\acute{d}$ $\acute{s}bk$
3. i^3h n p^3 nty $\acute{s}th$ n 1
4. p^3 r^*-h^* t^3 i^3hy
5. p^3 r^*-htp p^3 isw
6. p^3 $\acute{s}y$ p. t p^3 $gnh\acute{d}$
7. $[p^3]$ $\acute{s}y$ $d^3.t$ p^3 $hr-n^3h$
8. p^3 $sw\acute{s}p$ n mtr n^3 X
9. p^3 $sw\acute{s}p$ n wnm n^3
 $tbty.w$
10. $[p^3 s]w\acute{s}p$ n $wbt(?)$
 t^3 Π
11. $[p^3 t]wr$ n wnm p^3 isw
12. $[p^3 twr]$ $wbt(?)$ p^3
 m^3y p^3 $[']$
13. $[shn$ n^3h t^3 \underline{dl}

The following translation consistently substitutes modern names for the planets and zodiacal

signs, even where the Egyptian expressions are very different, as "Horus the bull" for Saturn etc.

Os. 1.

- ¹ Year 43
- ² month I, day 16(?),
8 o'clock of
- ³ the day. The moon
in(?)
- ⁴ The sun in ♀ (and)
Mercury.
- ⁵ The moon in Taurus
21°.
- ⁶ The ascendant: Sagittarius (and) Mars.
- ⁷ The descendant: ♂
- ⁸ The lake of the
sky: ♀
- ⁹ The Dwat: Pisces
- ¹⁰ The middle *swšp*:
Scorpius (and) Saturn. Libra ^{10a} Jupiter
- ¹¹ The right (= western) *swšp*: Leo.
- ¹² [The] left (= eastern) *swšp*: Aquarius
- ¹³ The right (= western) *twr*: ♀
- ¹⁴ The left (= eastern) *twr*: Capricornus.
- ¹⁵ The house of provision
of life: Capricornus.

Os. 2.

- ¹ Year 4, month II,
day 9, 11 o'clock in
the evening.
- ² The sun in Libra.
- ³ Moon in Taurus 16°
(and) Mars.
- ⁴ The ascendant:
Pisces.
- ⁵ The descendant: ♀
(and) Venus.
- ⁶ The lake of the sky:
Sagittarius.
- ⁷ The lake of the
Dwat: ♂
- ⁸ The middle *swšp*:
Scorpius.
- ⁹ The left (= eastern) *swšp*: Leo.
- ¹⁰ The right (= western) *swšp*: Aquarius.
- ¹¹ [The] right (= western) *twr*: ♀

destroyed

Os. 3.

- ¹ Year 4, month VII,
(day) 1, 4 o'clock in
the evening
- ² The sun in Pisces
(and) Jupiter.
- ³ Moon in Sagittarius
1°(?)
- ⁴ The ascendant:
Libra.
- ⁵ The descendant:
Aries.
- ⁶ The lake of the sky:
Cancer.
- ⁷ The Dwat: Capricornus (and) Saturn.
- ⁸ The middle *swšp*: ♂
- ⁹ The left (= eastern) *swšp*: Pisces.
- ¹⁰ The right (= western) *swšp*: ♀
- ¹¹ [The] right (= western) *twr*: Aries.
- ¹² [The left (= eastern)]
twr: Aquarius(!)
Leo.
- ¹³ The house of provision
of life:
Scorpius.
- ¹⁴ The part of the
brother: Sagittarius.
- ¹⁵ The part of the
father: Capricornus.
- ¹⁶ The part of the child:
Aquarius (and)
Mercury.
- ¹⁷ The part of (?):
Pisces
- ¹⁸ The part of the fate:
Aries.
- ¹⁹ The house of provision
of death: Taurus
(and) Mars.
- ²⁰ The part of god: ♂
- ²¹ The house of the goddess: Cancer.
- ²² Psais: Leo.
- ²³ The evil spirit: ♀

Os. 4.

- ¹ Year 21, month XI,
day 13, 7 o'clock [of
the day].
- ² The sun in Cancer
(and) Mercury.
- ³ Moon in Sagittarius 1°
- ⁴ The ascendant:
Libra.
- ⁵ The descendant:
Aries.
- ⁶ The lake of the sky:
Cancer.
- ⁷ [The] lake of the
Dwat: Capricornus.
- ⁸ The middle *swšp*: ♂
- ⁹ The right (= western) *swšp*: Pisces.
- ¹⁰ [The] left (= eastern) *swšp*: ♀
- ¹¹ [The] right (= western) *twr*: Aries.
- ¹² [The] left (= eastern) [twr]: Leo.
The [house]
- ¹³ [of provision of li]fe:
Scorpius.

Os. 1. 2. 16(?): Reading of 10 clear; it follows a group which is either 5, 6 or 8. The position of the moon, given in line 5 as 8 21, would be exactly correct if one would read 16.—3. *i'h*: mention of the moon here (cf. line 5) seems to be meaningless.—3. *n*(?): The photograph shows at the end of this line a dark stroke. Dr. Hughes, however, carefully inspected the original and found that the "sign" in question is not ink at all but only a small depression in the surface of the clay. There follows, however, a short stroke of ink (like *n*) immediately after *i'h*.—10. *swšp*: no traces of *p*₃ visible.—10. 10: cf. the same writing for *mtr* in Os. 2 line 8.—10a: Written between lines 10 and 11.—14. *twr wbt*: without *n*, as in Os. 3 line 12.

Os. 2. 1. 4-*t*: *t* omitted by Spiegelberg.—1. *3h.t*: Spiegelberg reads *šmw*, which is astronomically excluded because, according to line 2, the sun was in Libra.—1. 11-*t*: Spiegelberg reads 11 *n*.—1. *rhwy*: 11 o'clock "in the evening" could be understood as 11th hour of the daytime i. e. one hour before sunset. In Os. 3, 1 however, occurs 4 o'clock "in the evening" which must be the 4th hour of the night. Hence *rhwy* must be interpreted as "night."—4. *p*₃(?): looks like an *r*.—4. *n*(?): merely a point.—5. *n*(?): merely a point.—5. *ntr dwš*: Spiegelberg reads *n*(?) *tu-ntr*.—8. *n*: omitted by Spiegelberg.—8. 10: 10 = *m*₄ stands here for *mtr*, as Spiegelberg [3] p. 150, note 4 remarks. Cf. Os. 1, line 10.—9 ff. *n*: disregarded by Spiegelberg.

4. From these four ostraca we can derive the following scheme according to which they were composed. The first step consists in giving the date (regnal year, month, day and hour) and the position of the sun, the moon and the planets. The next part consists in giving the four "κέντρα," the three "swšp" and the two "twr." The "κέντρα" are the rising and setting signs (*r-h* and *r-h'p*) and the lake of the sky and Dwat, respectively.⁹ The *swšp* correspond to the ἀποκλίματα of Greek astrology,¹⁰ i. e. the signs inclined in the direction of the daily rotation, thus preceding the three upper κέντρα by 30 degrees. The "left-" and "right-hand" *twr*'s define a parallel line to the left and right *swšp* (cf. Fig. 1). I do not know the Greek analogue to this latter concept, except that the two *swšp* constitute the corners of a "trigonon." The last step consists in enumerating the "houses" in their relationship to the zodiac in its special position at the given moment. The first

Os. 3. 1. [*pr*].*t* 1: Thompson reads *pr ss* 1. Both *pr.t* and *3h.t* would be compatible with the remains but the reading *3h.t* is eliminated by the following line, which says that the sun stood in Pisces. The following large stroke must represent the first day (without ☉), as is frequently the case in the planetary texts.—1. *rhwy*: cf. Os. 2, 1.—1. ... *rhwy*: traces, probably meaningless.—3. ...: according to photograph traces (disregarded by Thompson) which might be interpreted as *n* 1 (i. e. "first degree").—9. [*tbt*].*y*: sic, without the plural *w*.—11, 12, 13. The break between upper (Thompson) and lower part (Spiegelberg) crosses these lines.—12. *twr wbt*: cf. Os. 1, line 14.—*p*₃ *mw*: error, corrected by adding *p*₃ *m*₃.*y*.—13. *shn* = provision: sic, according to Thompson; Spiegelberg read 2.—14. *sn*: this reading according to Thompson; Spiegelberg read *mw*.—14 ff. *any.t*: Spiegelberg *t*.—17. *hne* = (?): Spiegelberg translated "Trennung," probably because of the subsequent line.—18. *shne* = fate: cf. the discussion by Thompson [1] p. 230; Spiegelberg translated "Vereinigung."—19. ' : written over *t*₃ *any.t*. 19. *shn*: cf. line 13.

Os. 4. 1. *sw*: omitted by Spiegelberg.—13: Spiegelberg reads 13 and translates 15.—7-*t*: left-hand part of the numeral is broken off.—3. *n* 1: disregarded by Spiegelberg.—8 ff. *swšp*: Müller [2] col. 9 proposes to read only *swš*, considering the last sign as determinative. Spiegelberg [3] p. 150, note 1 opposes this assumption.—8. *n*₃ *h*: Spiegelberg *p*₃ (?) *k*₃ but correct in [3] Pl. IV.—9. *n*₃: Spiegelberg *p*₃.—12. *p*₃ [*'*]: *p*₃ disregarded by Spiegelberg.

house is not repeated because it is the ascending sign, already mentioned before. The next sign is

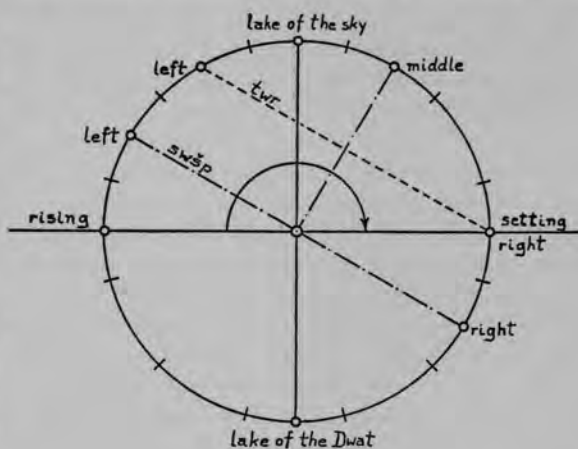


Fig. 1.

⁹ This fact was recognized already by Thompson [1] p. 228 and has been confirmed independently and based on entirely different textual material (commentary to the Nut-picture in the cenotaph of Seti I and the tomb of Ramesses IV) by Lange-Neugebauer [1] p. 57 ff.

¹⁰ Cf. e. g. Bouché-Leclercq AG p. 273 and Thompson [1] p. 231.

the ' *shn nh* "house of provision of life" ¹¹ (the "lucrum" of classical astrology); the knowledge

¹¹ Thompson [1] p. 230. Cf. Bouché-Leclercq AG p. 280 ff. or Boll-Bezold SS p. 62 f. See furthermore the new text Gundel, Dek. p. 410.

of this sign determines the rest according to the known scheme, which is therefore only once completely given (Os. 3), while the other ostraca restrict themselves to the 'shn 'nh alone. Not one of these ostraca indicates the conclusions drawn from these elements.

There exist different small discrepancies between this general scheme and the text in the ostraca. Ostraca 2 and 3 interchange "right" and "left" in indicating the *swšp*'s but give the *twr*'s correctly. Ostrakon 1 turns all *swšp*'s and *twr*'s 90 degrees towards the east, obviously by erroneously calling the left hand *swšp* the "middle" one and then modifying all the rest accordingly. All these errors, however, are only due to carelessness and do not disprove the above-given rules.

5. We turn now to the problem of dating the four ostraca. The easiest case is No. 1, where the regnal year 43 points to Augustus as the only possibility. This is fully confirmed by the planetary positions (cf. the table given on p. 120). The position of the moon (γ 21), however, can only be accounted for if we interpret the dates in terms of the Alexandrian calendar, using "Julian years," and not as dates in the Old-Egyptian wandering year which would give a totally different value (\approx 22) for the moon's longitude.

Os. 3 is also easy to date because the positions of both of the slowly moving planets, Jupiter and Saturn, are given. Here again the position of the moon shows that the Alexandrian calendar was used. All positions given in the text accordingly agree perfectly with modern calculation for the year Tiberius 4 = 18 A. D.

More difficult is the dating of the two remaining ostraca because of missing information about the two outer planets. In Os. 4 the regnal year 21 points to Augustus or Tiberius. Assuming Augustus, the moon does not agree with the sign Sagittarius, regardless of whether we use the Egyptian or Alexandrian calendar. Tiberius 21, however, brings the moon into the right place if we interpret the date in the Alexandrian calendar. Sun and Mercury then also become correctly placed.

Os. 2 requires a longer discussion. From the positions given for the sun (\approx) and the moon (γ 16), it follows that the moon must be about three days after opposition. Assuming the Alexandrian calendar, we find October 3 (\pm 1 day) as the date of full moon. Investigating all regnal

years 3¹² and 4 between, say, 40 B. C.¹³ and 160 A. D. as to full-moon dates we find that only Tiberius 3, Domitianus 3 and Hadrian 4 remain possibilities. All these dates are, however, ruled out by considering Mars, which is far from γ in all these dates. We are, therefore, forced to abandon our assumption of Alexandrian calendar and to interpret the date as Egyptian. Doing so, we obtain perfect agreement with the text for the year Tiberius 4 not only so far as sun and moon are concerned but also for Venus and Mars.

The table on p. 120 shows the results obtained. Comparing text and calculation, one must keep in mind that the Egyptian limits of the zodiacal signs must not necessarily coincide with ours (true vernal point); as a matter of fact, the Demotic planetary tablets show that 4° or 5° should be added to calculated values in order to get Egyptian longitudes.¹⁴ In the given dates, (a) means Alexandrian calendar, (e) Egyptian, (j) Julian.

The small deviations in the case of moon (daily movement from 11 to 15 degrees!) and Mercury are easily accounted for, because all these horoscopes are of course based on calculation and not on actual observation.

The fact that three of these ostraca use the Alexandrian calendar and one the Egyptian is in itself of interest. It shows on the one hand how early the Augustan new order was adopted by Egyptian scribes, and on the other hand, how unstable the calendarical rules were. This is underlined by experience with other texts. The Alexandrian calendar is the basis for the Stobart planetary tables, covering the years from 71 A. D. to 143 A. D., but the Egyptian calendar is employed both in the planetary tables of Pap. Berlin 8279, written after 42 A. D., and in the moon tables of Pap. Carlsberg 9, written after 144 A. D.¹⁵ That Ptolemy and his successors (from Pappus and Theon to Copernicus) base all their calculations on Egyptian years is well known.

¹² The reading 3 would be even better than 4. The same sign form occurs, however, as 4 in the date of Os. 3 and in Pap. Carlsberg 9.

¹³ Among the approximately 50 published horoscopes on Greek papyri and ostraca, the oldest is from 4 B. C. (P. Oxyrh. No. 804; erroneously printed A. D. instead of B. C.), and only five belong to the first cent. A. D.

¹⁴ Cf. Neugebauer [1] p. 230.










¹⁵ Cf. Neugebauer [1] p. 229 and Neugebauer-Volten [1] p. 398.







	Os. 1		Os. 2		Os. 3		Os. 4	
	text	calcul.	text	calcul.	text	calcul.	text	calcul.
☉	ⲙⲗ	ⲙⲗ 19	ⲙ	ⲙ 1	ⲕ	ⲕ 5	Ⲙ	Ⲙ 12
☾	ⲟ 21	ⲟ 22	ⲟ 16	ⲟ 24	ⲗ 1(?)	ⲙ 29	ⲗ 1	ⲗ 21
♀	ⲙⲗ	ⲙ 4			ⲙ	ⲕ 18	Ⲙ	Ⲙ 6
♀			ⲙⲗ	ⲙⲗ 5				
♂	ⲗ	ⲗ 27	ⲟ	ⲟ 6	ⲟ	ⲟ 23		
4	ⲙ	ⲙ 18			ⲕ	ⲕ 11		
ⲕ	ⲙ	ⲙ 15			ⲟ	ⲟ 12		
date	text	(Augustus) 43 I(a) 16 8 ^h d.	(Tiberius) 4 II(e) 9 11 ^h n.		(Tiberius) 4 III(a) 1 4 ^h n.		(Tiberius) 21 XI(a) 13 7 ^h d.	
	equiv.	+ 13 IX(j) 13	+ 17 IX(j) 26		+ 18 II(j) 25		+ 35 VII(j) 7	









6. The dates obtained in the preceding section show that all four ostraca give horoscopes for men living in the first half of the first century of our era. As to the place of origin, Os. 1 was found in the campaign of the Oriental Institute of the University of Chicago during 1929/30 at Medinet Habu. Os. 4 was purchased in 1899 by Spiegelberg

in Gurna,¹⁶ Os. 2 and the lower part of Os. 3 ten years later by Wreszinski in Luxor.¹⁷ This makes it very probable that all four texts were written by the same man at Medinet Habu.

It is possible that also the last horoscope, Os. 5, belongs to the same group, but it is too badly preserved to be dated. One can read the following:¹⁸

1 [p³ r⁴] n p³ k³ 
 2 [i^h n] p³ k³ 17(?) 
 3 [p³ r⁴]-h⁴ p³ hr⁴-nh 
 4 p³ r⁴-htp p³ gn^hd ... 
 5 p³ šy t³ p.t t³ 
 6 p³ šy t³ d³.t
 7 p³ iswe m
 8  pr(?) p³ šy 
 9  pr(?) p³ šp-šy 

[The sun] in Taurus 
 [Moon in] Taurus 17°(?) 
 [The] ascendant: Capricornus 
 The descendant: Cancer
 The lake of the sky: 
 The lake of the Dwat:
 Aries. m
 house(?) of šy.t
 house(?) of] šp-šy.t

1. n: omitted by Thompson. — 2. 17(?): omitted by Thompson; according to the preceding ostraca one would expect n before the number-sign. — 3. hr⁴ 'nh: written in hieratic signs corresponding to      [*]
 — 4.: strokes which might be a determinative. —
 5. : written in hieratic, probably ending  or 
 as Dr. Hughes recognized. — d³.t: Thompson thought

that the latter part of the line did not belong to the word d³.t, as dots in his transcription indicate. Dr. Hughes, however, pointed out to me that we have here only a full spelling of d³.t. — 7. Thompson hesitatingly read my, but Dr. Hughes recognized that iswe becomes clear if one eliminates the long tail of the sign šy reaching down into line 7 from line 6.

¹⁷ Spiegelberg [3] p. 149.

¹⁸ Cf. Thompson [1] p. 232 f.

¹⁶ Spiegelberg [2] col. 223 note 1.

Lines 1 to 7 indicate beside the positions of sun and moon the four $\kappa\epsilon\upsilon\tau\pi\alpha$ \asymp Ξ \asymp Υ . One should now expect the three $\sigma\upsilon\delta\pi$ \asymp \mathfrak{X} \mathfrak{M} , but line 7 mentions without explanation \mathfrak{M} , which would be the left *twr*. Also the two following "houses," mentioned in the two last lines (8 and 9), do not fit into the regular scheme as given by Os. 3.

§ 2. The date of origin of Egyptian astrology and the symbol \asymp

7. It is well known that there is no trace of astrology in Egypt before the Hellenistic period. Moreover, as Kroll pointed out,¹⁹ the doctrine going under the name of Nechepso and Petosiris reflects circumstances in Egypt and Syria existing in the middle of the second century B. C. It seems possible, however, to discover traces of a phase approximately a hundred years older by using the relationship between the zodiac and the Egyptian calendar established in ostrakon D 521 of the Strassburg collection, published 1902 by Spiegelberg.²⁰ This text is as follows:

¹ p^3 wn p^3 5 syw $'nh$ hr - p^3 - k^3 p^3 syw

² p^3 r p^3y hr - d^3 p^3 syw m^3e - hs p^3y

³ sbk^3 p^3 syw $thwty$ p^3y p^3 ntr - twy

⁴ hr s^3 $is.t$ p^3y hr - p^3 - ste p^3 syw imn p^3y

⁵ p^3 rn n p^3 5 syw $'nh$ irm $ntrw$ nb


⁶ r ir rnw drw . . . p^3 wn n^3 syw nty sr

⁷ p^3 ibd 12 . . . II $pr.t$ p^3 isw III $pr.t$ p^3 k^3

⁸ IV $pr.t$ n^3 $htrw$ tpj smw p^3 $knhd$


⁹ II smw p^3 m^3e III smw t^3 ppy

¹⁰ IV smw t^3 $ihy.t$ tpy $^3h.t$ dl^3

¹¹ II $^3h.t$ p^3  III $^3h.t$ p^3 hr - $'nh$

¹² IV $^3h.t$ p^3 (?) n p^3 mw

¹³ tpy $pr.t$ n^3 $tbt.w$

¹⁴ dmd syw 12 p^3 ibd 1[2 

¹⁵ r p^3 ibd

2. m^3e hs : "the fierce lion" = god Apμνσις (cf. Spiegelberg [1] col. 8 note 3 and WB II p. 12).—3. sbk^3 : the Stobart tablets alternate between sbk and $sbky$; cf. Neugebauer [1].—4. hr s^3 $is.t$: Greek Αρσις (cf. WB III, 123).—5. p^3 rn : Spiegelberg $r(?)$ p^3 rn , but I do not see any trace of r .—5. $ntrw$: Spiegelberg n^3 $ntrw$.—6. drw . . . : read by Spiegelberg imw who translated "deren Namen darin sind (?)." Müller [1] 135 proposed the translation "die damit benannt werden." The group

¹⁹ Cf. RE 16, col. 2160-2167 or Cumont EA p. 39; cf. also the graphical representation in Gundel, Dek. p. 92.

²⁰ Spiegelberg [1] and Müller [1], [2]. Spiegelberg assumed the date of first cent. A. D. but earlier than Os. 4 (horoscope for 35 A. D.) which he placed into the second cent. A. D. (Spiegelberg [2], 225).

which follows drw is unintelligible to me.—6. . . . : Spiegelberg read " $is(?)$ " and translated "das sind," as he did in line 14. In the latter place, however, one must read " dmd " = "total, sum," which gives no sense here (Hughes).—6. sr spread (among): this translation according to Müller [1], 135: "welche verteilt sind (**CHP**) [auf (**E**) (?)] die 12 Monate." There is, however, nothing destroyed either at the end of line 6 or at the beginning of line 7 which could justify the restoration of the necessary [**E**]. Spiegelberg translates "die kreisen(?) in den 12 Monaten."—7. . . . : sign for "namely" heading lists; cf. Griffith, Ryl. III p. 420. Spiegelberg read $is(?)$ but gave no translation.—7. $pr.t$: Spiegelberg smw (twice).—7. isw : Spiegelberg isw "die Wage"; corrected by Müller [1], 135.—8. $pr.t$: Spiegelberg smw .—8. smw : Spiegelberg $pr.t$.—9. smw : Spiegelberg $pr.t$ (twice).—10. smw : Spiegelberg $pr.t$.—10. t^3 $^3hy.t$: Spiegelberg n^3 $sti(?)$, corrected in his article [3] to t^3 $'hi$. The whole group is written above signs crossed out by the scribe.—11. p^3 . . . : signs carefully crossed out by the scribe. Spiegelberg [3] p. 148 and Pl. IV gave a restoration of the original signs but I am not able to recognize a single trace of them.—12. p^3 (?) n p^3 mw : Spiegelberg's reproduction of this passage in [3] Pl. IV contains three errors: the sign after the first group is not the star but a long vertical line with a cross in its middle (crossed out?); the following n is missing (nothing being destroyed); the star at the end is omitted. The first part of the first group is crossed out by the scribe. Müller [1] 135 proposes the reading ssw ; Spiegelberg opposes this reading (OLZ 5, 136 note 1 and [3] p. 148 note 3). Perhaps, it was the intention of the scribe to cancel the whole group before p^3 mw (cf. Os. 4 line 10 and Os. 3 line 6, both of which have only p^3 mw).—13. $pr.t$: Spiegelberg smw .—14. dmd : Spiegelberg read is and translated "das sind." For dmd see Griffith, Ryl. III 412 and Sethe, Bürgschaftsurk. p. 167 ff. [Hughes].—15. r p^3 ibd : ignored in Spiegelberg's translation.

Translation:

- ¹ List of the 5 living stars: Horus the bull (= Saturn), it is the star
- ² of Re. Horus the red (= Mars), it is the star of the fierce lion.
- ³ Sbg (= Mercury), it is the star of Thoth. The morning star (= Venus),
- ⁴ it is Horus, son of Isis. Horus of the secret (= Jupiter), it is the star of Amun.
- ⁵ These are the names of the 5 living stars together with all gods
- ⁶ constituting their names. The list of the stars which are spread (among)
- ⁷ the 12 months, viz.: VI Aries. VII Taurus.
- ⁸ VIII Gemini. IX Cancer.
- ⁹ X Leo. XI Virgo.
- ¹⁰ XII the horizon (= Libra). I Scorpius.
- ¹¹ II [Sagittarius]. III the goat-faced (= Capricornus).
- ¹² IV the (?) of the water (= Aquarius).

¹³ V Pisces.

¹⁴ Total 12 stars, 1[2] months, [one star]

¹⁵ to the month.

The above given list of the five planets follows the order

♂ ♂ ♀ ♀ ♀

which separates the evil planets ♂ and ♂ from the benevolent ♀ and ♀ by the doubtful ♀ — an idea also expressed in the younger Babylonian order.²¹ There now follows a coordination of months and zodiacal signs in which the first month coincides with ♍. This indicates the use of the Egyptian calendar, because during Roman times the sun never stands in Scorpius during the first months of the Alexandrian calendar. In the Egyptian calendar, however, Scorpius coincides with the path of the sun in 250 B. C., a coincidence which holds to a continuously decreasing degree during the following century.²² The list given here corresponds therefore to a situation of the third century B. C.

8. Accepting this conclusion, a problem might find its solution which otherwise seems to be without possibility of explanation, namely the denomination of the sign ⚊ as "horizon" (⚊.t) in all our Demotic sources,²³ known to us as the "balance." It is well known, on the other hand, that the Greeks usually combined the two neighboring signs, Scorpius and Libra, into one great configuration of a scorpion, calling one half (the ♍) the "body" the other half (⚊) the "claws" (χαλαί) of the scorpion.²⁴ The name ζυγός "(beam

of the) balance," Latin "libra," appears rather late in Greek literature: only once in Hipparchus' writings (ca. 150 B. C.),²⁵ more frequently in Geminus (first cent. B. C.) and afterwards, but more in Roman works than in Greek.²⁶

On the other hand, the constellation "balance" is already known in Old-Babylonian times, but in the series "*mul-apin*" also the equivalent "sting of the scorpion" appears.²⁷ The cuneiform ephemerids from the Seleucid period keep "balance" (*rin*) and "scorpion" (*gir-tab*) strictly separated.²⁸ The latter statement holds equally for the Egyptian representations of the zodiac, the earliest preserved examples being at Dendera (time of Tiberius). In the pictorial representations a clear balance is always given and nothing like a "horizon." How can this contradiction be explained?

I think one must first try to discover a reasonable motive for calling a zodiacal sign "horizon." Such a reason can be found in the special situation which is assumed by the correspondance between zodiacal signs and months, given in ostrakon D 521, discussed above, where the sun is supposed to travel in "Scorpius" during the first month of the Egyptian calendar. From this assumption follows, namely, that the preceding sign "balance" was rising heliacally at the beginning of the year — sufficient reason, indeed, to be called "(being in the) horizon." Such an emphasis on the quality of a constellation to indicate the beginning of the civil year by its heliacal rising would certainly be nothing surprising in Egypt; moreover this sign is, so to speak, the "Horoscope" of the year.²⁹

If one considers this explanation of the name "horizon" as plausible, one can accept the fol-

²¹ The Babylonian order is ♀ ♀ ♀ ♂ ♂; cf. Boll [1]. In Egypt we have the following orders: according to *synodic period* in the planetary tables (cf. Neugebauer [1]), according to "*houses*" in the Hathor temple of Dendera (outer hypostyle; Porter-Moss VI p. 49) and according to "*exaltations*" in the same temple (eastern Osiris-chapel; Porter-Moss VI p. 99), as discovered by Boll (Sphaera p. 232 ff.). Cf. furthermore the article "Hebdomas" by Boll in RE 7 col. 2547-2578.

²² Cf. Neugebauer [1] p. 246.

²³ Müller [1] and [2] assumed an erroneous etymology which substituted *mhy.t* by ⚊.t. But this is in itself very unlikely and contradicts both spelling and ideogram in all texts. Cf. Spiegelberg [3] p. 147 note 6.

²⁴ This distinction, e. g., frequently in the Tetrabiblos (cf. e. g. I, 9 ed. Robbins p. 50/51). There exists even a glyptic representation of the claws alone, namely on a reused block in the Panhagia Gorgopico or Hag. Eleutherios church in Athens. Cf. G. Thiele, *Antike Himmelsbilder* (Berlin 1898) p. 57 ff. and L. Deubner, *Attische Feste* (Berlin 1932) p. 248 ff. esp. Pl. 40 no. 41. The date of this frieze is uncertain; Deubner quotes argu-

ments for dates from the third cent. B. C. to the third cent. A. D.

²⁵ Ed. Manitius p. 222, 9. This passage is therefore considered as suspicious.







²⁶ Cf. the articles "Libra" and "Scorpius" by Gundel in RE 13, 116-137 (1926) and A 3, 588-609 (1927); furthermore the article "Sternbilder" in Roscher GRM 6, 963-967 (1937) by Boll and Gundel.

²⁷ CT 33, 2 obv. II, 11 *mulzi-ba-an-na si mulgir-tab*. Cf. Jensen [1].

²⁸ This follows from all moon and planetary tablets published by Kugler and is only confirmed by unpublished material. The "sting of the Scorpion" appears, however, in the horoscope AB 251 obv. 3 (Thompson CBL plate 2).

²⁹ One might remark that the decans are called the 36 ὁροσκόποι in P. Brit. Mus. No. 98 line 15 (Kenyon GP I p. 128).



lowing outline of the development. When, during the third cent. B. C., Babylonian and Greek astrological concepts were introduced into Egypt, the more or less precisely defined belt of 36 decanal configurations was replaced by the twelve zodiacal signs.³⁰ The Greek names were translated into Egyptian, but since the "Scorpio" extended over two twelfths, it was felt so inconvenient that the Babylonian order Scorpius-Libra was adopted so far as pictorial representations are concerned. Simultaneously, the horoscopic character of this star group leads to an original Egyptian name which is the only one preserved in Demotic documents.

9. The further development can be traced with a much higher degree of certainty than the beginnings. Since Roman times,³¹ astrology became in Egypt what we understand today by this word, deeply influencing the life both of the native and the Hellenistic-Roman population. Undoubtedly, every astrologer was familiar with the Egyptian symbols for the zodiacal signs and the planets, and it is therefore not surprising to find Egyptian forms used as sigla in the professional writings. Obviously, the Hieratic-Demotic sign ³² in this way became a representation for the Greek "claws of the Scorpion." We have, however, a very interesting bit of evidence that  still was pronounced "χρηλαί." Hephaestion of Thebes, an astrological author of the 4th cent. A. D. says:³³ Τὸ δὲ μετὰ τὴν Παρθέον δωδεκατημόριον ὠνόμασαν οἱ παλαιότεροι πάντες ζυγόν καὶ τοῦτον σημεῖον ποιοῦνται τόδε , ὃ δὲ Πτολεμαῖος χρηλὰς καὶ τὸ σημεῖον αὐτοῦ τοιόνδε  "All the older ones called the sign after Virgo the Balance and used the following symbol: ; Ptolemy, however, called it the claws and used the sign .


 The statement about the use of the words "balance" and "Claws" gives, as we have seen, the inverse order; but the

³⁰ The earliest representation of the zodiac in Egypt known to me is the ceiling in the temple of Khnum north-west of Esna (about 200 B. C.; cf. Porter-Moss VI p. 118).

³¹ It might be repeated that there exists, at least to my knowledge, not a single horoscope in Egypt (either in Greek or Demotic) earlier than 4 B. C. (cf. above note 13.)

³² The second line in  might have its origin in forms like  Cf., e. g., P. Cairo 50143 (Spiegelberg DD II Pl. 59).

³³ CCAG 8, 2 p. 43 (P 57, 1). This codex was written in the XVth cent. (cf. CCAG 8, 2 p. 11, No. 21).

essential point in our discussion is the fact that the combination of the "horizon" and the abbreviation χ for $\chi\rho\eta\lambda\alpha\iota$ existed at least as early as the 4th century A. D. or even actually in Ptolemy's time, the very period of some of our Demotic astronomical texts. That this combination of the two symbols was not an isolated incident is proved by the fact that it is actually used in one of the codices of the Tetrabiblos, namely in the Cod. Vatican 208³⁴ written in the XIVth cent.³⁵ Hence we have at least one thousand years of continuous tradition down to Hephaestion. His testimony finally bridges the short gap to the extant Demotic papyri and ostraca. On the other hand, the Greek terminology was more and more replaced by Latin, in which "*libra*" always was the preferred notation. So it happened that the sign  was not only called but also was interpreted as the picture of a balance—which is still the explanation in common use today.

§ 3. The Zodiacal and Planetary Symbols

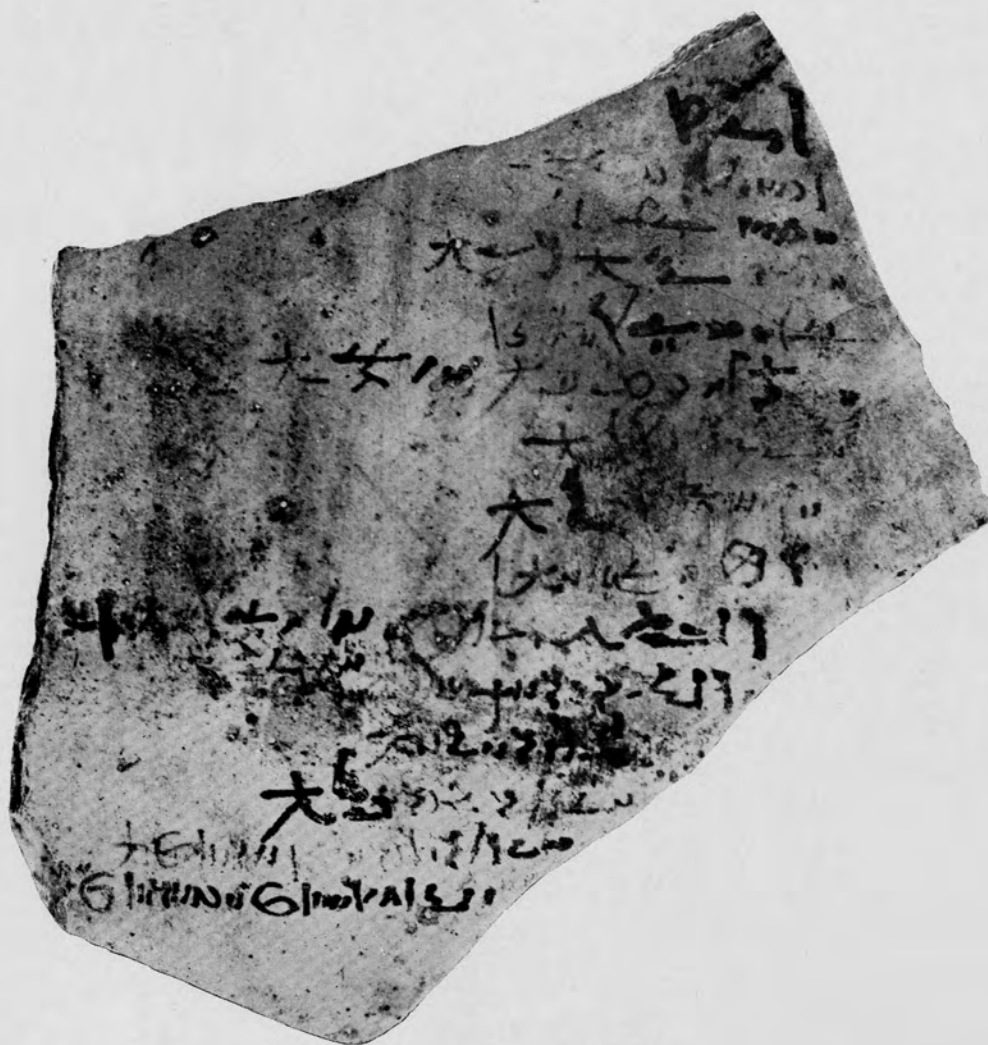
10. If one wishes to investigate the history of the mediæval and modern symbols used for zodiacal signs and planets, then the signs used in Demotic documents are undoubtedly the earliest known symbols—cuneiform ideograms like *hun*, *múl*, etc. are of course out of the question.³⁶ However, to follow the history of these sigla into Greek and Latin documents meets the greatest difficulties, not so much by lack of documents but by the combined efforts of classical scholars in virtually extinguishing all traces of the palaeographical situation. The astronomical symbols have been treated with the greatest disregard, symbols being

³⁴ I owe photocopies of the pages 150 r., 151 v. to the courtesy of the Library of the University of Michigan; they correspond to ed. Boll-Boer p. 73, 22-76, 33 and ed. Robbins p. 152-158.

³⁵ This codex belongs to family γ according to Boll-Boer p. xiv (codex B = codex A Robbins).

³⁶ Agnes M. Clerke says in the article "Zodiac" on p. 998 of the 11th ed. of the Encyclopaedia Britannica (1911): The origin of the zodiacal symbols "is unknown; but some, if not all of them, have antique associations. The hieroglyph of Leo, for instance, occurs among the symbols of the Mithraic worship" quoting "Lajard, Culte de Mithra Pl. 27 fig. 5" where a Babylonian cylinder seal is published. This seal (which, of course, has no relationship whatsoever to the worship of Mithra) is republished by E. Douglas Van Buren AfO 9 (1933/34) p. 168 fig. 4 (I owe this quotation to Miss E. Porada). The symbol in question (looking like the modern symbol for the ascending node) is, however, shown by Mrs. Van Buren to be a symbol of the goddess Ninhursag and has no relation to the configuration "Leo."

PLATE 1



Ostrakon Chicago M. H. 3377

ground of the Hellenistic material is at least as different from the Egyptian material of the New Kingdom (and its predecessors of the Middle Kingdom) as from the Babylonian sources. The


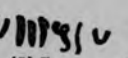
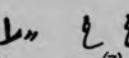
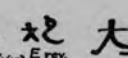
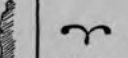
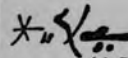
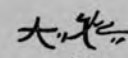
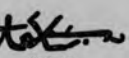
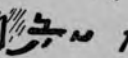
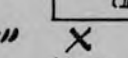
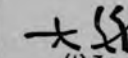
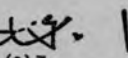
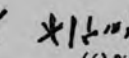
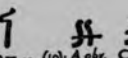
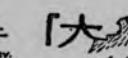
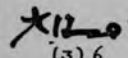
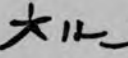
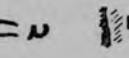
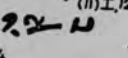
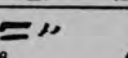
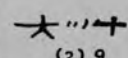
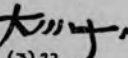
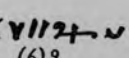
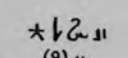
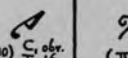
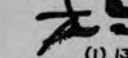
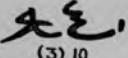
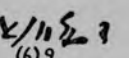
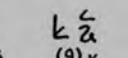
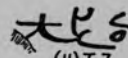
world of Hellenism is in every respect a world of its own, being much more the beginning of the medieval world than the conclusion of the ancient.

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PLATE 2

<p style="text-align: center;">γ</p> <p>      </p> <p> (3) II (5) 7 (6) 7 I, 20 (7) II A. obv. (10) E. rev. I, 9 (II) I, II </p>									
<p style="text-align: center;">δ</p> <p>      </p> <p> (1) 5 (2) 3 (3) 19 (5) 2 (6) 7 (7) I, 21 A. obv. I, 10 (10) E. obv. I, 1 </p>									
<p style="text-align: center;">ε</p> <p>      </p> <p> (1) 7 (2) 7 (3) 20 (6) 8 (7) I, 10 (10) A. obv. I, 11 C. obv. I, 30 C. rev. I, 5 (11) I, 12 (I) 33 (II) </p>									
<p style="text-align: center;">ϑ</p> <p>      </p> <p> (3) 6 (4) 2 (5) 4 (6) 8 (7) II, 13 (10) A. obv. I, 12 </p>									
<p style="text-align: center;">ζ</p> <p>      </p> <p> (2) 9 (3) 22 (6) 9 (7) I, 12 (9) u. A. obv. (10) C. obv. I, 13 I, 16 (II) (II) </p>									
<p style="text-align: center;">η</p> <p>      </p> <p> (1) 13 (3) 10 (6) 9 (7) I, 13 (9) v. (10) A. obv. I, 2 (11) I, 7 (III) </p>									

